

4G/5G Omnidirectional Antenna

Manufactured for Connected IoT Limited

Model: CI-OMNI-4500-RG58

698–960 MHz | 1710–2690 MHz | 3300–4500 MHz
2 × SMA male | 2 × 5 m RG58 coaxial cables | IP67 | 50 Ω | DC grounded

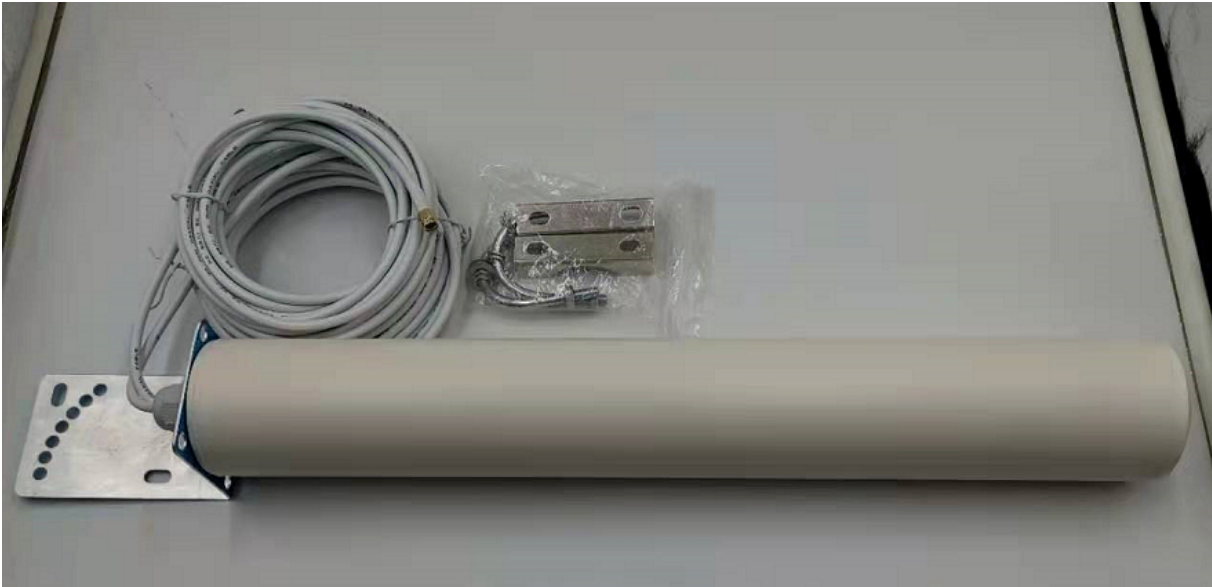
Product Overview

The CI-OMNI-4500-RG58 is a rugged outdoor omnidirectional antenna for fixed 4G and 5G installations. It covers the 698–960 MHz, 1710–2690 MHz and 3300–4500 MHz bands and is supplied with two 5 m RG58 cables terminated with SMA male connectors. Its IP67-rated, DC-grounded construction makes it suitable for industrial IoT, CCTV, ANPR, transport, utilities and remote monitoring applications.

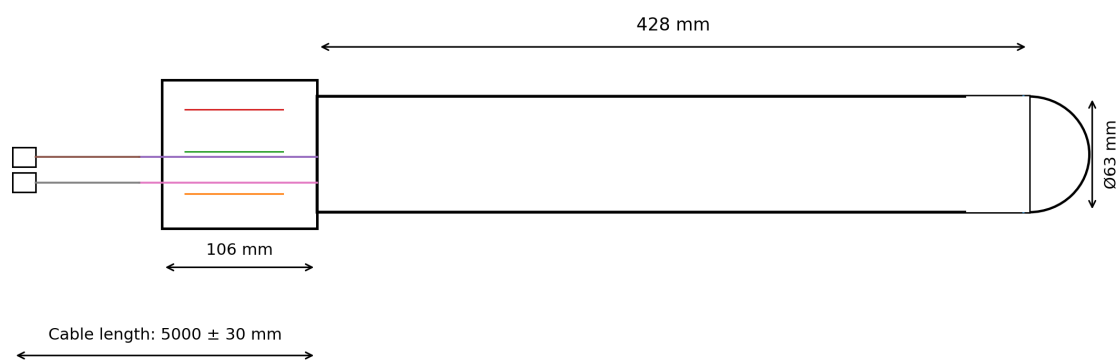
Technical Specifications

Parameter	Specification
Model	CI-OMNI-4500-RG58
Frequency range	698–960 MHz / 1710–2690 MHz / 3300–4500 MHz
Input impedance	50 Ω
VSWR	≤ 2.0
Gain	Peak measured gain: 698–960 MHz: up to 7.53 dBi 1710–2690 MHz: up to 6.38 dBi 3300–4500 MHz: up to 8.97 dBi
Polarisation	Vertical
Radiation pattern	Omnidirectional (360°)
Maximum input power	50 W
Antenna dimensions	Ø63 × 428 mm
Mounting method	L-bracket pole mount
Operating temperature	–20°C to +85°C
Storage temperature	–40°C to +85°C
Connector type	2 × SMA male
Cable type	2 × RG58 coaxial cables
Cable length	5000 ± 30 mm
Ingress protection	IP67
DC grounding	DC grounded
Wind resistance	60 m/s
Pole diameter	Ø25–Ø40 mm
Weight	985 g

Mechanical Construction



Product photograph showing the antenna, dual coaxial leads and pole-mount hardware.



- 2 × SMA male connectors
- 2 × RG58 coaxial cables
- Pole mounting range: Ø25–Ø40 mm

Simplified mechanical drawing — not to scale

Simplified mechanical drawing. Dimensions are in millimetres unless otherwise stated.

Mechanical Testing

Test	Condition	Result
Bending test	Apply a 120 g load to the cable end, 30 cm from the fixed joint. Bend the cable ±60° for 1,000 cycles.	No mechanical damage or degradation in electrical performance.

Test	Condition	Result
Static-load test	Apply a 15 lb static load to the cable end for one minute.	No mechanical damage or degradation in electrical performance.
Pull-force test	Apply tensile force between the connector and cable using a dynamometer.	Withstands 7 kgf without damage or degradation in electrical performance.
Vibration test	Amplitude: 1.10 mm. Frequency: 33.30 Hz. Duration: 120 minutes on the X-axis, 120 minutes on the Y-axis and 240 minutes on the Z-axis.	No visible damage or degradation in electrical performance.

Environmental Testing

Test	Condition	Acceptance result
Salt-spray test	96 hours. Distilled water; pH 6.5–7.0; spray rate 1.4 ml/80 cm ² /h; compressed-air pressure 1 kgf/cm ² ; relative humidity 98%; chamber temperature 45–47°C; Test system temperature: 35°C. Manufacturer reference: GB1266-86.	Characteristics remained within 30% of their initial values.
Heat test	+85 ±2°C for 96 hours, followed by 30 minutes under normal conditions before testing.	Characteristics remained within 30% of their initial values.
Humidity test	+40 ±2°C at 90–95% RH for 96 hours, followed by 30 minutes under normal conditions before testing.	Characteristics remained within 30% of their initial values.
Cold test	–40 ±2°C for 96 hours, followed by 30 minutes under normal conditions before testing.	Characteristics remained within 30% of their initial values.

Test conditions and acceptance wording have been normalised from the manufacturer-supplied report.

Final RF Performance Report

RF Measurement Conditions

The RF data in this report are taken from the final Line 1 and Line 2 Excel workbooks exported directly from the manufacturer’s antenna test equipment. Measurements were performed on the complete antenna assembly, including the supplied 2 × 5 m RG58 coaxial cables and SMA male connectors. The reported values are measured results and have not been compensated for cable loss.

The final workbooks contain sampled gain and efficiency data, two-dimensional radiation data for the Phi 0°, Phi 90° and Theta 90° planes, and 3D E-total, left-hand circular and right-hand circular radiation components.

Sampled Frequency Coverage

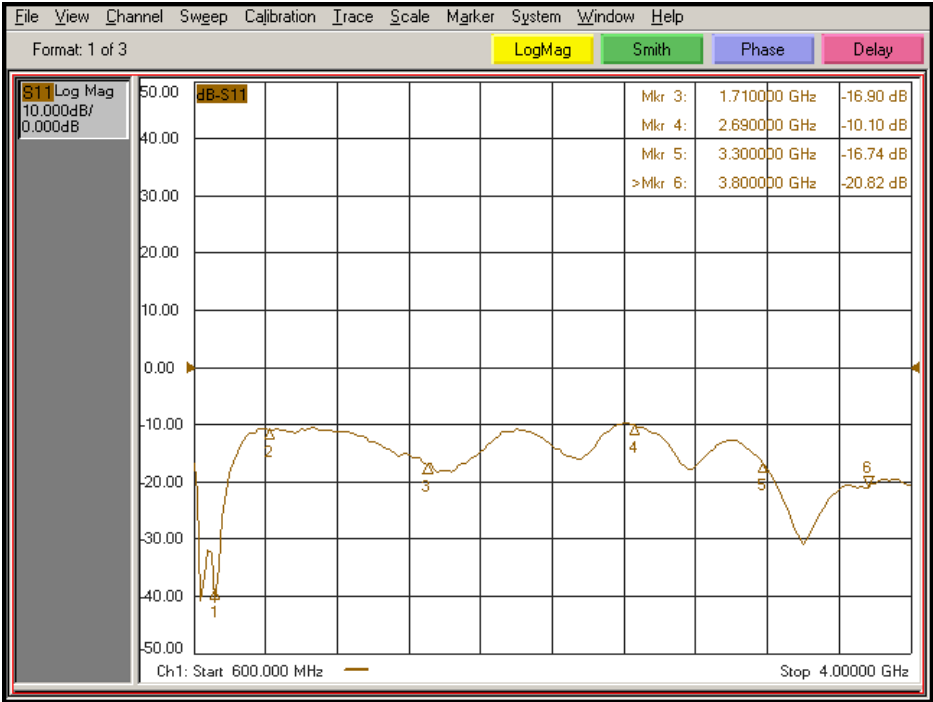
Declared operating band	Sampled frequencies in final reports	Step
698–960 MHz	700–960 MHz	20 MHz
1710–2690 MHz	1750–2500 MHz	50 MHz
3300–4500 MHz	3400–4500 MHz	50 MHz

Band summaries below use the highest measured values recorded at the supplied sampled frequencies. The gain and efficiency graphs are reproduced as exported from the manufacturer’s final test-equipment reports.

Electrical Performance — Return Loss and Smith Chart

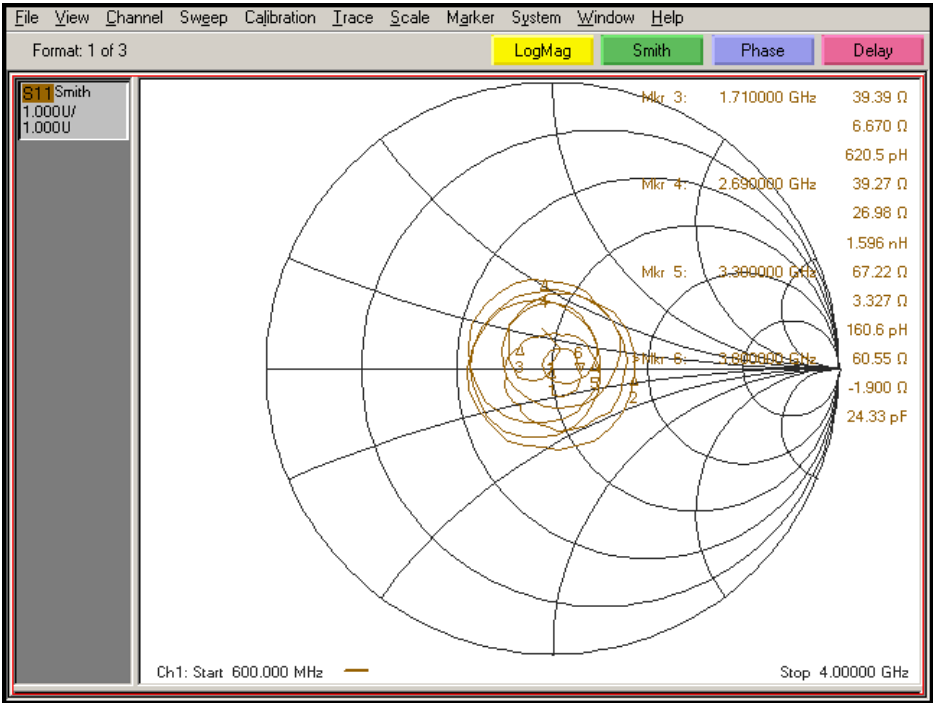
The manufacturer-supplied vector network analyser plots show impedance matching from 600 MHz to 4000 MHz.

Return Loss



Selected return-loss markers are -16.90 dB at 1710 MHz, -10.10 dB at 2690 MHz, -16.74 dB at 3300 MHz and -20.82 dB at 3800 MHz.

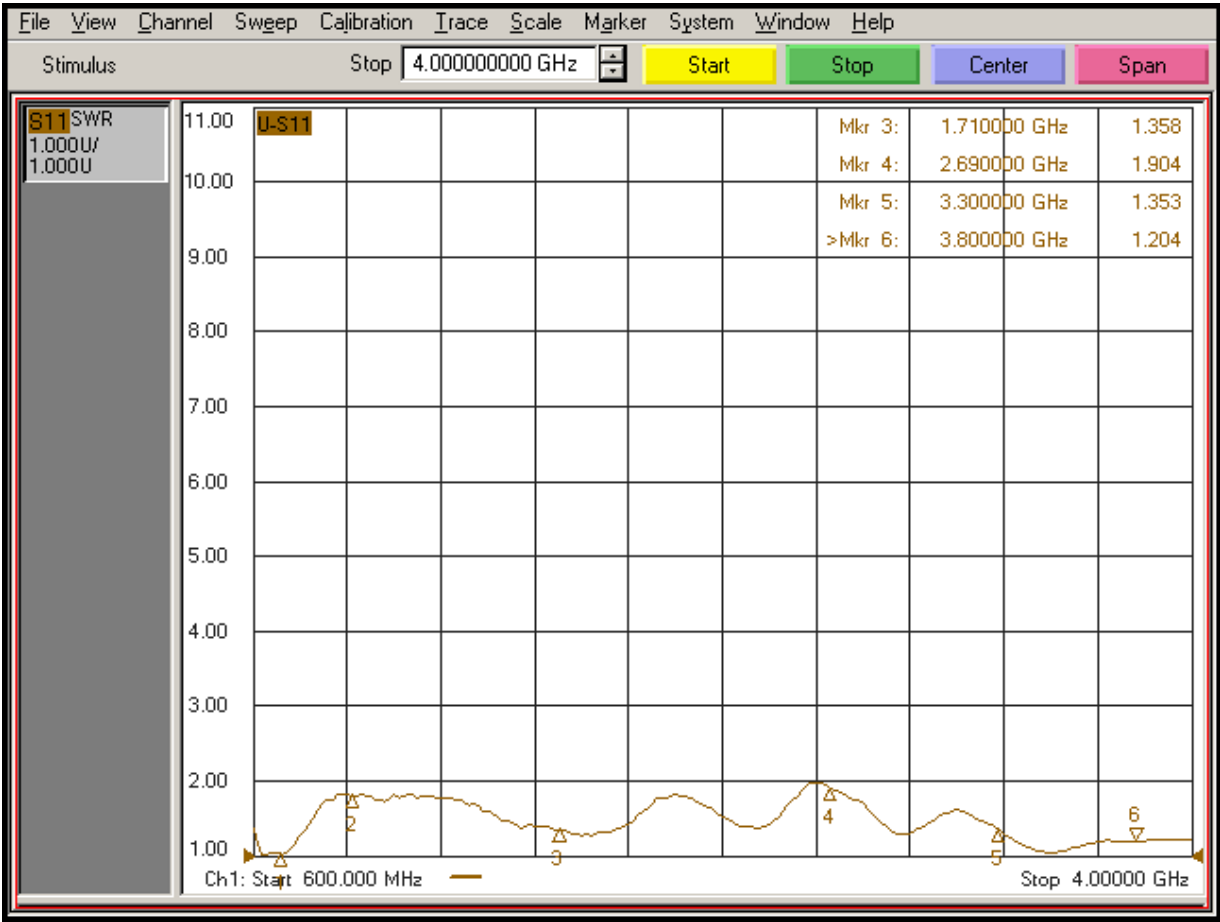
Smith Chart



The Smith chart shows impedance behaviour across the same analyser sweep and supports assessment against the nominal 50 Ω system impedance.

Electrical Performance — VSWR

The manufacturer-supplied VSWR sweep covers 600 MHz to 4000 MHz.



Manufacturer-supplied VSWR sweep. Selected marker values are shown below.

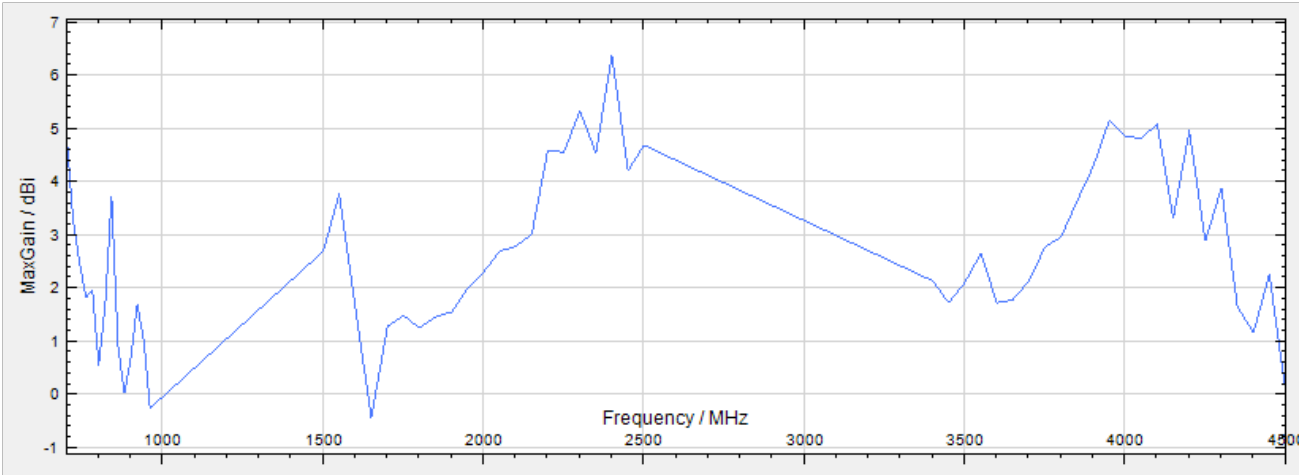
Selected Marker Results

Frequency	Measured VSWR
1710 MHz	1.358
2690 MHz	1.904
3300 MHz	1.353
3800 MHz	1.204

The selected markers are within the specified VSWR limit of ≤ 2.0 . The analyser sweep ends at 4000 MHz; sampled gain, efficiency and radiation-pattern measurements through 4500 MHz are presented separately.

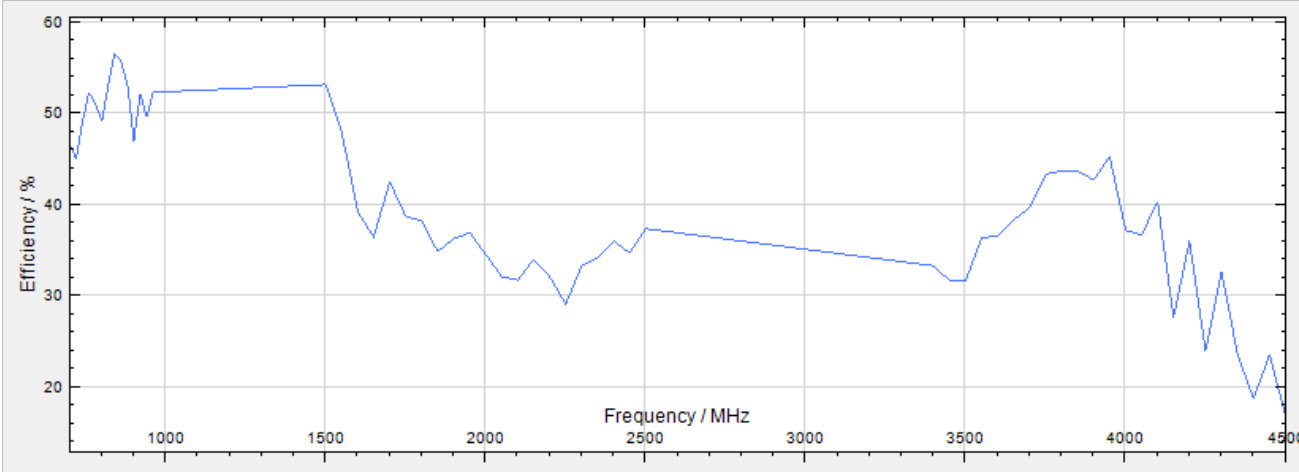
Line 1 — Gain and Efficiency

Measured Maximum Gain



Direct equipment-export maximum-gain plot for antenna Line 1.

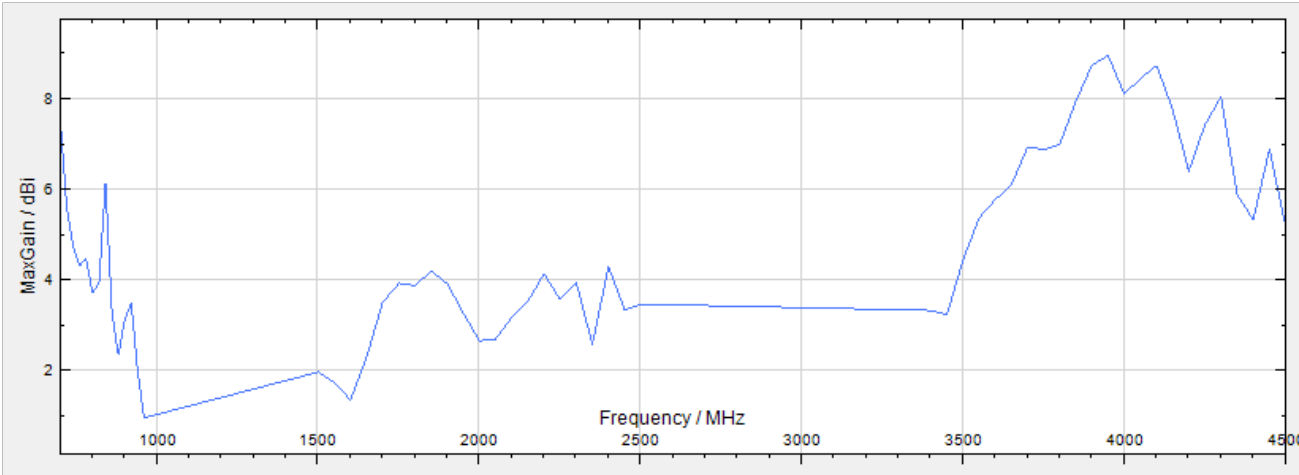
Measured Total Efficiency



Direct equipment-export total-efficiency plot for antenna Line 1.

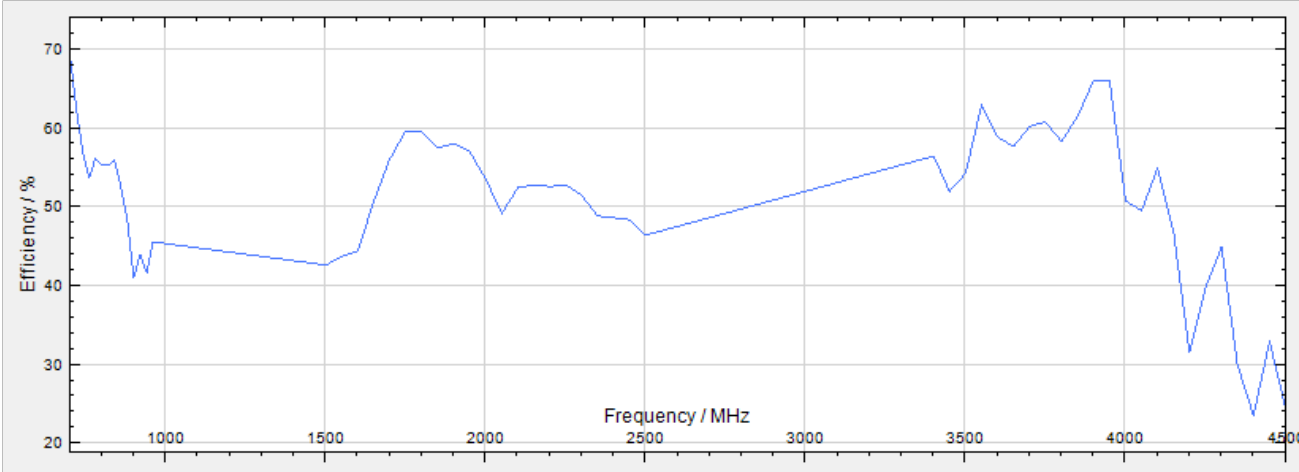
Line 2 — Gain and Efficiency

Measured Maximum Gain



Direct equipment-export maximum-gain plot for antenna Line 2.

Measured Total Efficiency



Direct equipment-export total-efficiency plot for antenna Line 2.

Measured RF Performance Summary

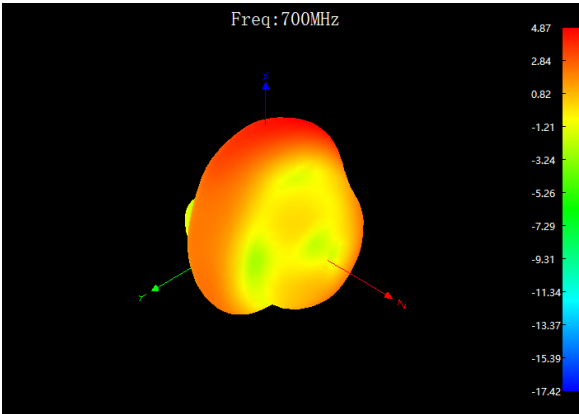
The table shows the highest measured gain and total efficiency recorded within each declared operating band at the supplied sampled frequencies.

Operating band	Line 1 peak gain	Line 2 peak gain	Line 1 peak efficiency	Line 2 peak efficiency
Frequency range	Value and frequency	Value and frequency	Value and frequency	Value and frequency
698–960 MHz	4.87 dBi @ 700 MHz	7.53 dBi @ 700 MHz	56.62% @ 840 MHz	69.50% @ 700 MHz
1710–2690 MHz	6.38 dBi @ 2400 MHz	4.30 dBi @ 2400 MHz	38.73% @ 1750 MHz	59.70% @ 1750 MHz
3300–4500 MHz	5.15 dBi @ 3950 MHz	8.97 dBi @ 3950 MHz	45.29% @ 3950 MHz	66.07% @ 3900/3950 MHz

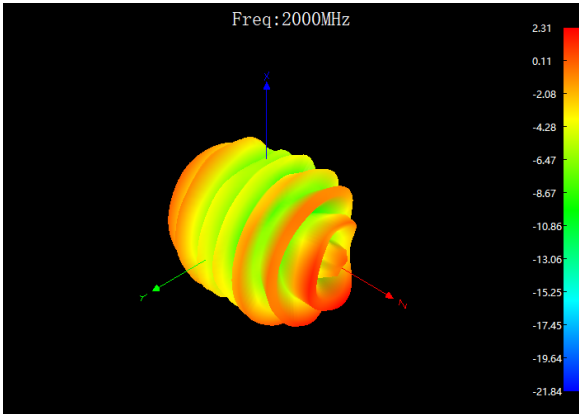
Values shown are the highest measured results at the supplied sampled frequencies. Measurements were performed on the complete supplied antenna assembly, including the 5 m RG58 cables and SMA male connectors.

Line 1 — Representative 3D E-Total Radiation Patterns

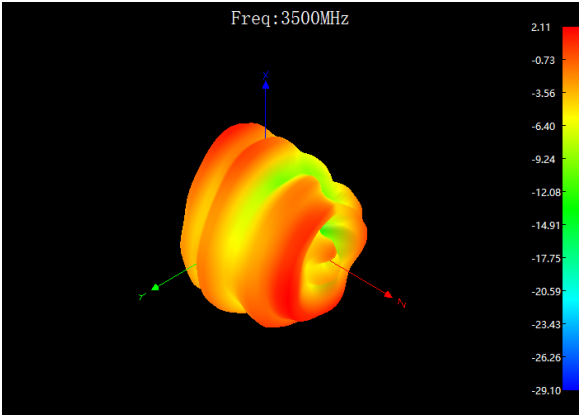
Representative final manufacturer-supplied 3D E-total patterns are shown at low-band, LTE and 5G sampled frequencies.



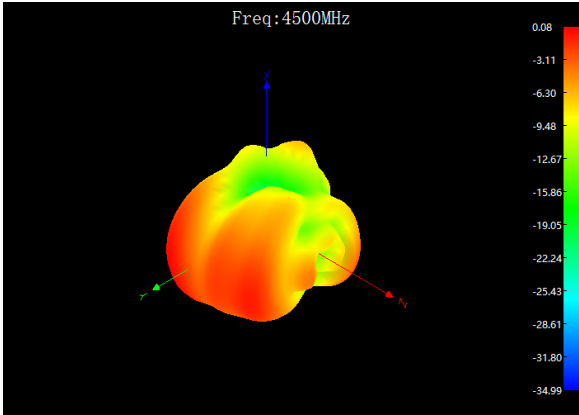
Line 1 — 700 MHz



Line 1 — 2000 MHz



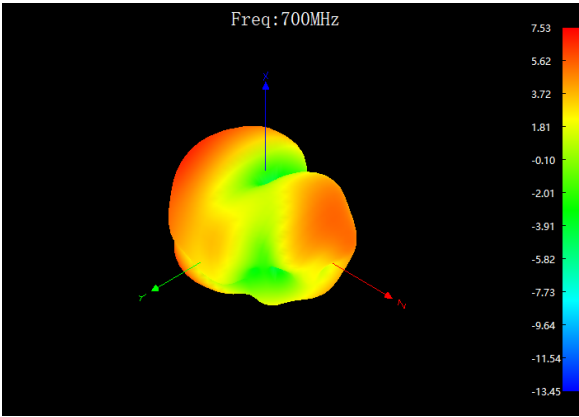
Line 1 — 3500 MHz



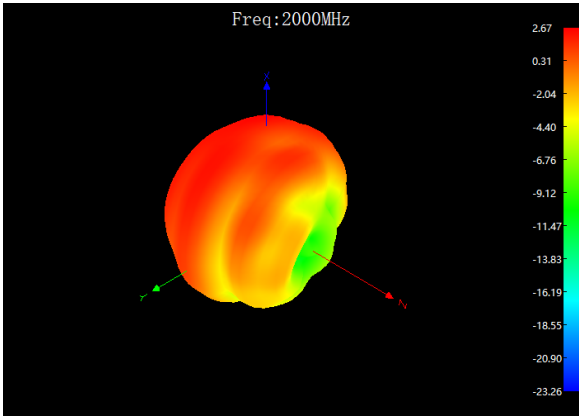
Line 1 — 4500 MHz

Line 2 — Representative 3D E-Total Radiation Patterns

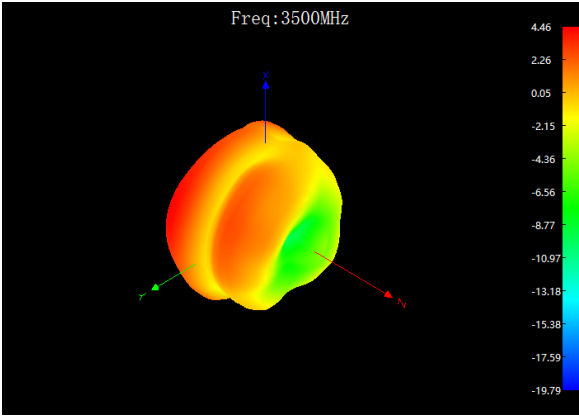
Representative final manufacturer-supplied 3D E-total patterns are shown at low-band, LTE and 5G sampled frequencies.



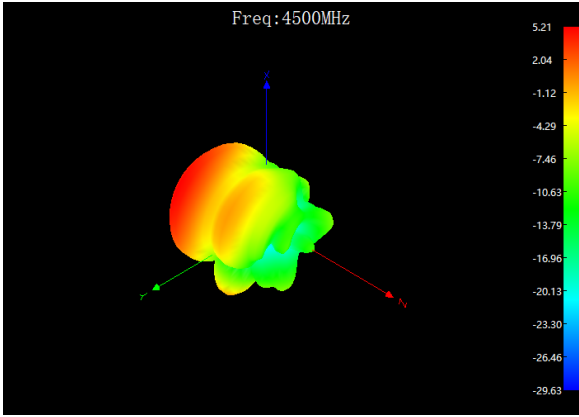
Line 2 — 700 MHz



Line 2 — 2000 MHz



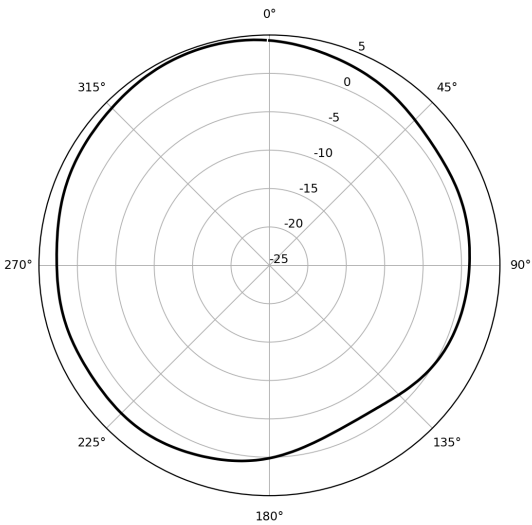
Line 2 — 3500 MHz



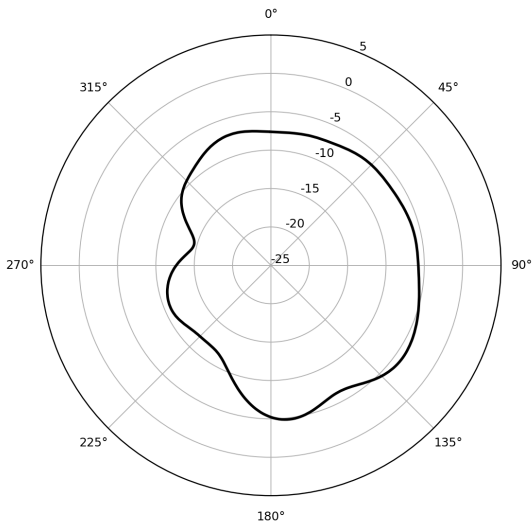
Line 2 — 4500 MHz

Line 1 — Representative Horizontal-Plane Patterns

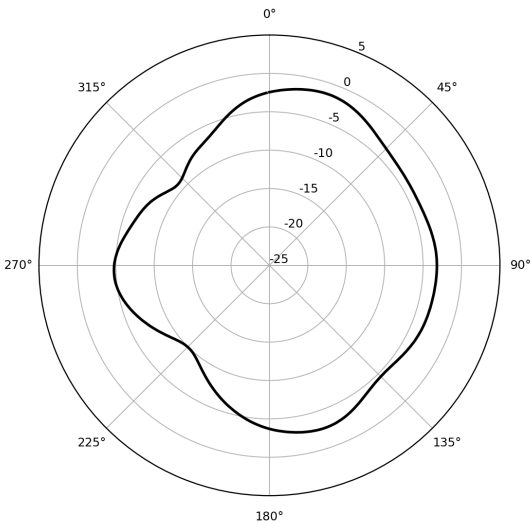
Theta 90° E-total cuts represent the horizontal-plane radiation pattern used to assess omnidirectional coverage. A common radial scale is used.



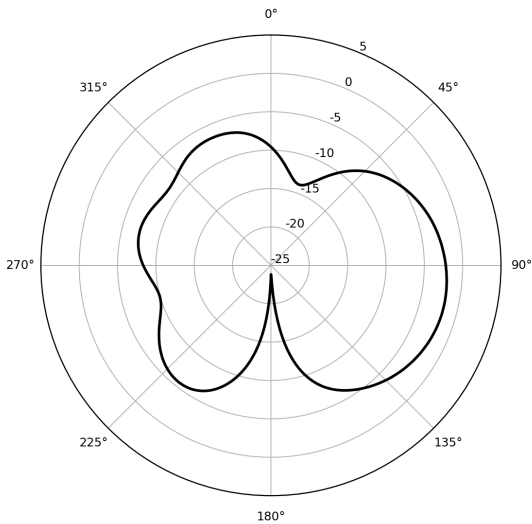
Line 1 — 700 MHz



Line 1 — 2000 MHz



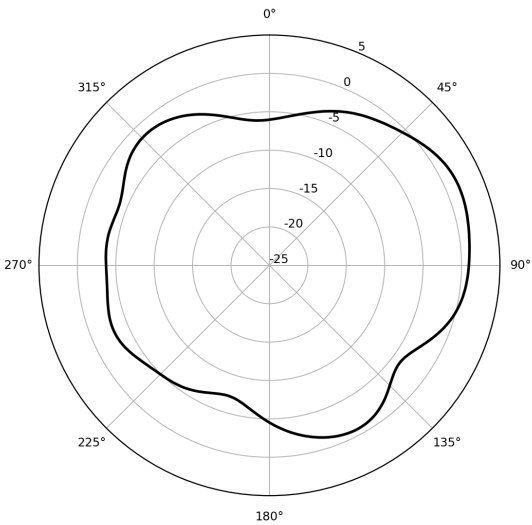
Line 1 — 3500 MHz



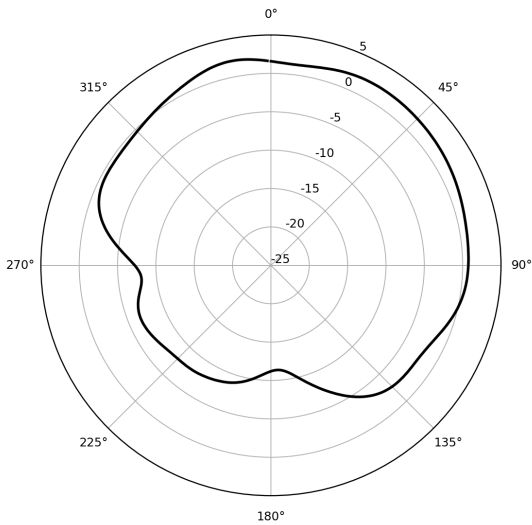
Line 1 — 4500 MHz

Line 2 — Representative Horizontal-Plane Patterns

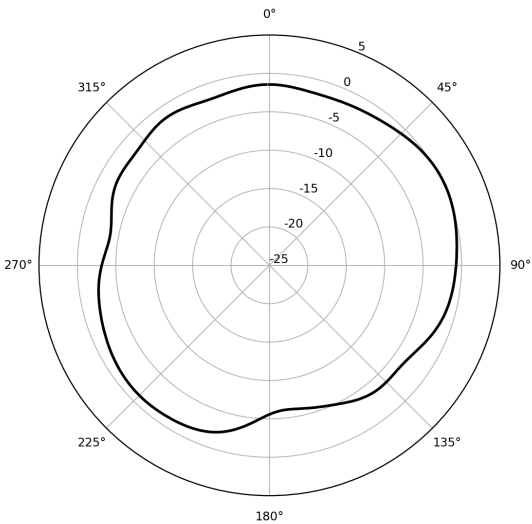
Theta 90° E-total cuts represent the horizontal-plane radiation pattern used to assess omnidirectional coverage. A common radial scale is used.



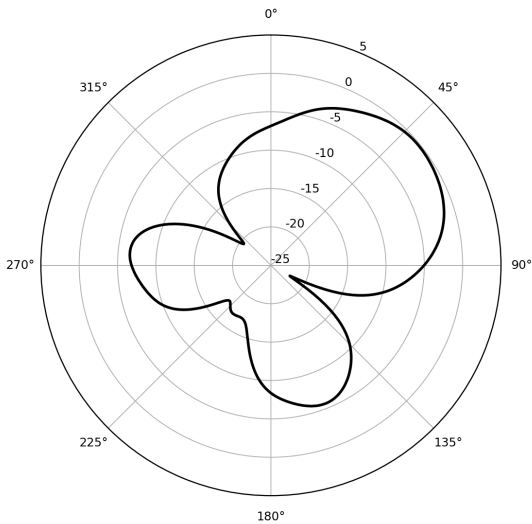
Line 2 — 700 MHz



Line 2 — 2000 MHz



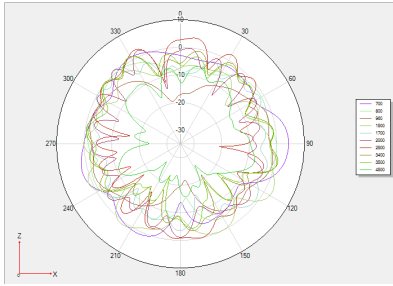
Line 2 — 3500 MHz



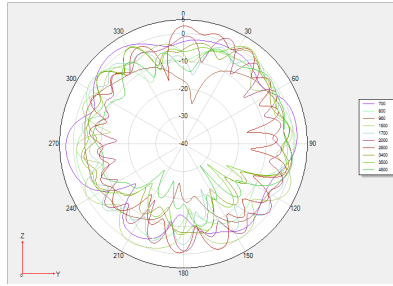
Line 2 — 4500 MHz

Direct Equipment-Export 2D Plane Cuts

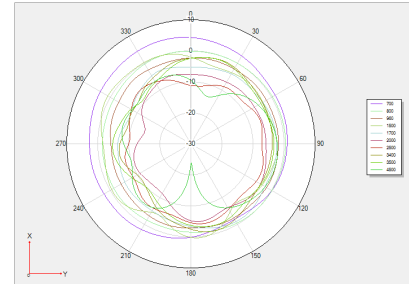
The following polar plots are reproduced directly from the final manufacturer test-equipment exports and show combined sampled-frequency traces for Phi 0°, Phi 90° and Theta 90°.



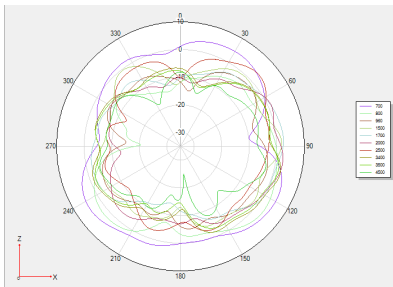
Line 1 — Phi 0°



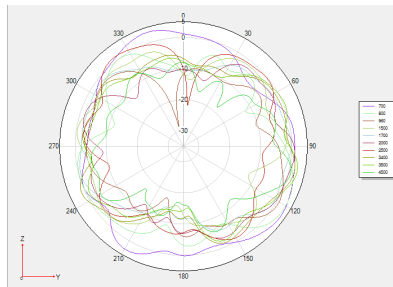
Line 1 — Phi 90°



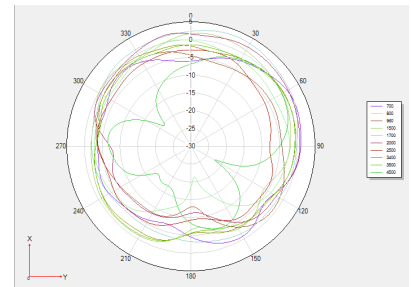
Line 1 — Theta 90°



Line 2 — Phi 0°



Line 2 — Phi 90°



Line 2 — Theta 90°

All RF plots and numerical summaries in this section are based on the final manufacturer workbooks.